ON CERTAIN NORTH AMERICAN ELATERIDÆ, NEW AND OLD

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In the proceedings of the California Academy of Sciences (March, 1932) appeared an extended paper by Dr. E. C. Van Dyke on various genera of Elateridæ. This important paper, the most notable contribution to the literature of our Elateridæ since the days of Le Conte and Horn, is of especial value to present day students of the family because of the inclusion of analytical tables and bibliographies of all our known species of such difficult and long-neglected genera as Limonius, Athous and Ludius, which are now brought up to date and into convenient shape for further study. There still remains some work of a similar nature to be done, for, among lesser needs, that most difficult genus of all — *Melanotus* — has yet to be brought under subjection. It is to be hoped that Dr. Van Dyke's paper will tempt some competent coleopterist having the necessary time, energy and material to undertake this task.

In so considerable a taxonomic work it would be strange if nothing were open to criticism. In going over the paper I find myself in a few instances unable to accept the author's conclusions. Whether it be a question of fact or merely one of individual opinion these several matters will be touched upon in the following pages, in which also will be found miscellaneous notes together with descriptions of a number of new species.

Adelocera Latr.

Adelocera mexicana Cand.

Dr. Van Dyke uses this name for a large species occurring with us in southern Arizona. I have recently (Can. Ent., 1932, p. 58) described this species as new under the name *A. nobilis*, and in the same paper, p. 59, have referred certain Florida specimens to *mexicana*, following Dr. Horn's identification of similar specimens in his own cabinet.

The two species are closely allied but apparently sufficiently distinct by a number of small differences. In the Arizona species the form is perceptibly more cylindrical, the squamiform hairs of the upper surface slightly narrower, the ventral punctures a little finer, the strial punctures of the elytra coarse at base but diminishing conspicuously in size apically, where they are sensibly equal in size to the interstitial punctures, which are everywhere finer than in the Florida species. In the latter the strial punctures diminish in size very little apically. Either species conforms well enough to Candeze's description of *mexicana,* which, however, makes no mention of the very conspicuous decrease in size of the strial punctures from base to apex, which is the chief distinguishing feature of the Arizona species. An actual comparison of specimens with the type of *mexicana* may be necessary to settle the uncertainty.

Conoderus Esch. (Monocrepidius Esch.)

In preparing his paper Dr. Van Dyke overlooked the several species of *Monocrepidius* described by me in the Canadian Entomologist, March, 1929. These are briefly referred to below.

Monocrepidius ferruginosus Fall Ariz.

This species runs to *athoides* by Van Dyke's table and it may be that the ferruginous form of the latter mentioned in his brief diagnosis is the same. I believe, however, that *ferruginosus* is distinct by the color, and especially by the distinctly rougher elytral intervals.

Monocrepidius delicatus Fall Ga.

Although the lobe of the fourth tarsal joint is narrow and inconspicuous in this species, it is, I think, most nearly related to *vespertinus* and *varians,* between which it may be placed. The short and nearly equal second and third antennal joints, which together are shorter than the fourth, as well as the smaller size at once separate it from *vespertinus,* and also according to description from *varians,* in which the third joint is said to be longer than the second, the two together as long as the fourth. The carina of the hind angles of the thorax does not turn obliquely inward in front as it does in *varians* and *aversus,* but

is parallel to the margin as it is in *vespertinus*. *Delicatus* is distinctly smaller than either *vespertinus* or *varians*, the length of my two examples being 5.75 mm. and 6.5 mm.

Monocrepidius difformis Fall Ariz.

Length 6.5 mm., dark brown with obscure interrupted vittæ on the elytral intervals. It has the hind angles of the thorax unicarinate, the carina evidently diverging from the side margin. As in *blandulus* Lec. and *auritus* Hbst. there are finer punctures intermixed with the coarser ones of the pronotum, these being somewhat more numerous in the present species. These three species form a natural connecting link between the more typical *Monocrepidius* and the subgenus *Heteroderes*, in which the fine punctures are far more numerous, generally more minute, and form a dense ground sculpture among which the larger punctures are scattered.

Monocrepidius (Heteroderes) planidiscus Fall Fla.

This is the same as the *M. fuscosus* of Blatchley (not *fucosus* as written by Van Dyke), which was published four years earlier (Can. Ent., 1925, p. 163) and overlooked by me at time of writing. Van Dyke uses the name *amplicollis* Gyll. for this species. This is not permissible according to Candeze, who states that in *amplicollis* the body beneath is marked with a double system of punctures the same as above. In *fuscosus (=planidiscus)* the punctures are simple and equal. *Amplicollis* is tabulated by Van Dyke as having the hind angles of the thorax unicarinate. They are, however, described as bicarinate by Candeze and the same is true of *planidiscus* as described by me. Blatchley merely says of *fuscosus* "hind angles strongly carinate." The inner carina is finer and much shorter than the outer but is distinct enough, at least in the great majority of specimens.

Conoderus suturalis Lec. Ala., Ind.

It seems to have escaped notice that this species also possesses a dual system of pronotal punctuation and is therefore to be included in the subgenus *Heteroderes*.

Conoderus rudis Brown* Ala.

Moderately slender; piceous brown above, the rear margin and all the angles of the prothorax diffusely testaceous; elytra each with a somewhat obscure irregular median rufotestaceous spot longer than wide and included between the second and eighth striæ; beneath fuscous brown, the prosternum somewhat paler, legs and antennæ pale testaceous; pubescence fine, short, recumbent. Antennæ rather slender, slightly passing the hind angles of the thorax, joint 2 very little shorter than 3, the two together perceptibly longer than 4, all joints elongate, median ones nearly twice as long as wide. Prothorax slightly longer on the median line than the maximum width, sides with a faintly perceptible sinuation at the base of the distinctly produced but not divergent hind angles, thence feebly convergent and just visibly arcuate to the rounding in of the front angles. Head and prothorax rather densely punctate, the punctures of the latter a little finer than those of the head, on close attention somewhat unequal in size but without that ground sculpture of micropunctulation which constitutes the distinguishing feature of the *Heteroderes* group; surface evenly convex, hind angles unicarinate, the carina rather fine, of moderate length, diverging gradually but not strongly from the lateral margin. Elytra equal in width at base to the thorax and fully two and one-third times as long as the latter; not quite two and one-half times as long as wide, sides barely visibly convergent from the base, becoming gradually more strongly so apically; striæ strongly impressed, intervals a little convex, finely punctate and slightly rugose. Body beneath finely punctate, the prosternal punctures a little coarser; lobe of fourth tarsal joint rather narrow but a little wider than the fifth joint so as to be perceptible from above. Length 5.8 mm.; width 1.7 mm.

Alabama: Grand Bay, May 28, 1931. A single specimen sent by Mr. Loding, who has others in his cabinet.

This species seems most nearly allied to *aversus* although the carina of the hind angles of the thorax being less divergent from the side margin than in that species might lead one to refer it to "15" of Van Dyke's table. It is an appreciably smaller species than *aversus,* the pronotal punctuation less fine and the

second and third antennal joints nearly equal in length, whereas in *aversus* joint 3 is very distinctly longer than joint 2. If traced through "15" of the table it runs to *suturalis* and *lepidus*. *Suturalis* as before remarked must be transferred to the *Heteroderes* group, while *lepidus* is a very small slender pale testaceous species with narrow black elytral markings which are not well indicated in the table.

Since writing the above Mr. Loding has sent me all his remaining examples of this species, eight in number. Six of these conform well to the above description, but two show a marked longitudinal extension of the elytral spot, and in one of them the spot also breaks through narrowly to the side margin and the elytral apex is also paler. One very large specimen measures 7 mm. in length. Mr. Loding writes that he has seen specimens only from the southern Alabama and Mississippi coast section.

Drasterius Esch.

From any standpoint the disposition of this genus in the Leng list is open to criticism and its make-up has been badly bungled. In the first place the transference of the species *dorsalis, comis* and *livens* to the genus *Æolus* is ill advised, and so far as I know is unsupported by any specialist in the Elateridæ. Certainly Candèze, Champion and Otto Schwarz, who recognize *Æolus,* all place these species in *Drasterius;* indeed, the only one of our species that they do refer to *Æolus* is *amabilis*. So far as our own fauna is concerned the modification of the fourth tarsal joint, on which *Æolus* is based, is so feeble and gradual and even in its most extreme form *(amabilis)* is so trifling, that in my judgment it is unworthy of even subgeneric import. It is probable that in many of the very numerous foreign representatives of the genus *Æolus* its characters are better developed, but the fact remains, as remarked by Champion, that it merges insensibly into *Monocrepidius* on the one side and *Drasterius* on the other.

* This species was described in the Canadian Entomologist, August, 1933, p. 174, while Prof. Fall's paper was in press. The description and remarks stand as Prof. Fall wrote them but Mr. Brown's name has been substituted for the one proposed by Prof. Fall.—ED.

The very close affinity of the above genera must be obvious to the most casual student and yet in the "List" *Monocrepidius* and *Æolus* are separated by some three hundred species of unrelated genera from *Drasterius* and its nearly allied genera *Megapenthes, Elater,* etc.

The recording of *dorsalis, comis* and *livens* in the "List" as three distinct species is not in accordance with the authorities, but this is a matter of little consequence since at best it is at present merely a matter of opinion whether these three names cover one, two or three species.

In 1917, Mr. Schaeffer described four species of *Drasterius,* two of which—*nigriventris* and *scutellatus*—he designated as referable to *Æolus* in case that genus were recognized. As the List recognizes *Æolus* these two species should have been placed there; all four however will be found under *Drasterius.*

D. fretus Csy. This is certainly nothing but *amabilis* as was long ago established and should not have been resurrected.

D. præses Cand. This is a synonym of *Ludius (Corymbites) conjungens* Lec. as Candeze himself admits in his 1891 catalogue. *L. (Corymbites) præses* Horn (1871) is the same thing.

Drasterius incongruus new species.

Moderately elongate, not very convex, integuments moderately shining; pubescence fine, short, recumbent, pale in color. Head blackish, pronotum rufotestaceous with broad fuscous stripe, elytra rufotestaceous at base, blackish in about apical two-thirds, the dark area not very sharply limited anteriorly and extending along the suture to base; beneath metasternum and abdomen entirely piceous, prosternum lightly infuscate, parapleura legs and antennæ rufotestaceous. Antennæ slender, not reaching the base of the thorax, not evidently serrate, joints 2 and 3 subequal and about one-half longer than wide, together longer than 4, the latter longest and fully twice as long as wide, 5–10 each subequal to 2 or 3 but slightly wider, the outer joints diminishing slightly in length. Front convex, punctures well separated, frontal margin strongly evenly rounded, not appreciably reflexed. Prothorax slightly longer than wide, rounded in front, thence nearly parallel to the apices of the hind angles, which are triangular, acute, not carinate; punctuation fine, sparse, evenly disposed, the punctures separated by about twice their own diameters and not at all larger or closer at sides; disk convex, median line not impressed. Elytra not quite two and one-half times as long as the thorax, at base as wide as the latter, widest at about the middle, the sides feebly arcuate; striæ fine, finely punctate; intervals flat, sparsely punctulate. Prosternum and pro-

pleura rather sparsely and evenly punctate, the latter a little less finely so; metasternum and abdomen somewhat more finely and closely so. Tarsi very slender, basal joint of hind tarsus but little longer than the second and distinctly shorter than the two following united. Length, 4.6 mm.; width, 1.4 mm.

Described from a single individual taken by the writer near Rimouski, Quebec, on the south shore of the Lower St. Lawrence River, July 4, 1931. The sex of the type is uncertain but the fact that the antennal joints beyond the third are clothed, especially beneath, with numerous longer erect hairs suggests that it may be a male.

By the generic tables this species runs straight to *Drasterius,* and it is provisionally assigned to that genus for the present. However, it does not look like a *Drasterius,* in which the relatively larger thorax produces quite a different facies. Moreover, the comparatively longer second and third antennal joints, the non-carinate hind angles of the thorax and the more slender tarsi with shorter basal joint all differ from the corresponding conditions in that genus. The presence of bristling erect hairs on the antennæ, other than the usual tactile setæ, has not been observed by me in either sex of any species of *Drasterius* examined.

Since writing the above a second example, in every respect like the type, has turned up in a small lot of Elaterids sent for identification by Mr. J. N. Knull. This specimen bears locality label Lake Opasatika, Quebec, June 3rd, and is returned as a paratype to Mr. Knull.

Elater Linn.

Elater sturmii Germ.

On page 301 of his paper, Dr. Van Dyke remarks: "This species should be restored. It was omitted in the Leng catalogue. It is a true *Elater* as observed by Le Conte, not a *Megapenthes* and a synonym of *granulosus* as he formerly believed." In this very positive statement I am convinced that the Doctor is in several respects mistaken.

That the *sturmii* of Germar was not the same as Melsheimer's *granulosus* was determined by Candèze from an actual specimen of the latter sent him by Le Conte for that purpose (see Cand. Mon. of Elateridæ II, p. 497). Moreover Candèze, to whom

the type or typical specimens of Germar's species were accessible, placed it unqualifiedly in *Megapenthes*.

This dictum of Candèze, which is also borne out by Germar's original description, so far as the latter is determinative, was properly accepted by Le Conte, who in his "Smithsonian List" of 1863 refers to *sturmii* Germ. under *Megapenthes granulosus* Melsh. as having been previously cited in error. Germar in his description vaguely assigns his species to North America, but according to Candèze, Germar obtained the specimens, from which his descriptions were drawn, from Dejean, and the latter, both in his catalogue and collection, indicates Cuba as the actual locality. And this fact in itself makes it highly improbable that Germar's species is a true Elater, since according to Leng and Mutchler's List of the Coleoptera of the West Indies this genus is not known from that region. Several species of *Megapenthes,* however, are listed and in their supplement to the list they specifically mention *Megapenthes sturmii* as being represented from Cuba in the U. S. National Museum collection.

In 1884, Le Conte, in a posthumous paper published by Horn, includes *sturmii* Germ. in a table of our species of *Elater,* but without explanation or comment thereon. There is in the Le Conte collection among the species of the genus *Elater* a single example from Enterprise, Florida, bearing the name "*E. sturmii* Germ." in Le Conte's handwriting. In form, size, intense black color and very dense pronotal sculpture it strongly suggests Germar's species and I have no doubt is the basis for the reappearance of this species in the '84 paper. If this be the case Le Conte's diagnosis must have been a very superficial one, for the specimen in question is neither an *Elater* nor a *Megapenthes,* but because of its lobed tarsi belongs to the tribe Dicrepidii and may perhaps be referred to Ischiodontus, though not typical of that genus. I have in my own collection a specimen from Cleveland, Fla., (J. N. Knull, collector) which is closely similar and probably specifically identical with the Le Conte specimen. I believe the species to be undescribed.

E. dimidiatus Lec. and *E. affinis* Lec.

These two species are assigned to two different categories in Van Dyke's synoptic table (p. 304), the former among those

species having the pubescence black on the pronotum and the latter among those in which the pronotal pubescence is yellowish. As a matter of fact, the pubescence is yellow or brownish yellow in both species as is stated by Le Conte in his original descriptions, and *dimidiatus* should be placed after *affinis* under caption "10" in the table. *Affinis* differs from *dimidiatus* by the shorter black apical space on the elytra, which is a little indented on the suture. In *affinis* the thorax is rather densely punctate and slightly more coarsely so than in *dimidiatus,* in which the punctuation is perceptibly sparser and the surface more strongly shining. The third antennal joint is relatively a little longer in *dimidiatus,* being in *affinis* but little longer than the second.

Megapenthes Kies.

Megapenthes solitarius new species.

Slender, attenuate, shining black; antennæ and legs piceous, the tibiæ and tarsi brownish; pubescence sparse, recumbent or inclined, obscure brownish fuscous. Head evenly convex, strongly not densely punctured, frontal margin prominently rounded at middle, narrowly reflexed at sides. Antennæ passing the hind angles of the thorax, widely sharply serrate, second joint very small, slightly wider than long, third joint twice as wide as the second, outer side a little oblique and equal to the length, the free angle acute; joints 4–10 similar to the third, the outer ones becoming slightly narrower, all destitute of the erect hairs present in the males of many species of the genus. Prothorax one-fifth longer than broad, sides gradually convergent and just perceptibly arcuate from base of hind angles to apical margin; hind angles parallel, unicarinate; disk highly polished, rather strongly but sparsely punctate, the punctures distant from one to two times their diameters except near the side margins where they are somewhat closer; median channel shallow, visible only posteriorly. Elytra barely as wide at the base as the thorax, about two and one-half times as long as the latter and three times as long as wide; sides feebly convergent from the base to behind the middle, apex narrowly rounded; striæ fine, strial punctures very fine, scarcely perceptible apically; intervals finely sparsely punctate, not perceptibly rugose. Prosternum and propleura coarsely rather sparsely punctured, metasternum and abdomen more finely and evenly so; basal joint of fore tarsi as long as the next three, of hind tarsi equal to the next two. Length, 5.9 mm.; width, 1.4 mm.

This interesting little species is represented by a solitary male example obtained from the Bischoff collection. It bore the simple label "4–lake," which New York collectors translated for me as Fourth Lake in the Adirondack region.

The third antennal joint similar to and equal in size to the fourth would exclude this species from *Megapenthes* according to standard generic tables. However, we already have included in this genus three species (*lepidus* Lec., *tarsalis* Schf. and *illinoisensis* Van D.) with this general type of antennæ and the present species may well be placed with them. Strictly speaking, no one of these three species has the third and fourth joints precisely equal, the third joint being slightly smaller though of the same triangular form as the fourth. *Solitarius* differs from all these in the uniformly jet black color of the body, and from *tarsalis* in addition by its shorter basal joint of hind tarsus, which in the latter species is said to be nearly as long as the four remaining joints.

Anchastus Lec.

Anchastus longulus Lec.

This species was described in 1878 from a single specimen taken at Enterprise, on the Upper St. John's River, Florida. Shortly afterward (1882) it appeared in the Index to Le Conte's Species by Henshaw as the male of *digitatus* Lec., previously described (1853) from Pennsylvania. I do not know on whose authority this assignment was made, but it has passed current for many years and the name *longulus* does not appear at all in the Henshaw List. In the Leng List (1919) *longulus* reappears as a distinct species, and as before I am unaware as to who is responsible for the change. Be that as it may the move is a correct one for *longulus* is by no means specifically the same as *digitatus*. The latter is known to me only by the unique type in the Le Conte collection and would seem to be an extremely rare thing. It is less elongate and more fusiform than *longulus,* and of a dark fuscous brown color throughout. *Longulus,* on the other hand, is reddish brown or ferruginous in color and of more cylindrical form in both sexes. In *longulus* the basal declivity of the elytra is paler in all specimens seen and the punctures in that region are simple. In *digitatus* the basal declivity is not at all paler than the rest of the surface and the punctures are rough; the sex of the type is not evident.

In Dr. Van Dyke's bibliography of the species of *Anchastus, longulus* is placed as a synonym of *digitatus,* probably in defer-

ence to the long-established custom. His tabular characters for *digitatus* are obviously drawn from specimens of *longulus,* but it should be remarked that whereas he regards the hind angles of the thorax as unicarinate (though admitting there may be a vague outer carina sometimes present), Le Conte describes *longulus* as having the hind angles bicarinate. In my own series the outer carina of the angles is, in my judgment, sufficiently distinct to warrant the term bicarinate. An examination of the type of *digitatus* shows the angles are also bicarinate, although Le Conte's description would lead one to infer that there was only a single carina.

Anchastus fumicollis new species.

Slender, rufotestaceous, moderately shining, finely pubescent. The pronotum is infuscate in variable degree, the margins, more or less, and often the median line diffusely paler; body beneath reddish brown, legs and antennæ testaceous. Antennæ scarcely at all serriform, passing the apices of the hind angles of the thorax by three joints in the male, slightly shorter in the female; joints 2 and 3 subequal or 3 slightly longer than 2, together scarcely as long as 4 in the male and about equal to 4 in the female; following joints subequal and fully twice as long as wide. Prothorax evidently longer than wide, sides feebly convergent and nearly straight from base almost to apex, and without perceptible sinuation before the hind angles, which are acutely produced and not divergent. Head and thorax evenly convex and densely rather coarsely subvariolate punctate; hind angles bicarinate, the outer carina longer than the inner, somewhat variable in length, quite close to the margin posteriorly and only feebly diverging in front. Elytra scarcely wider at base than the thorax, sides parallel for about two-thirds their length; striæ finely impressed, punctate; intervals sparsely but distinctly punctulate. Prothorax beneath rather coarsely punctate, the punctures on the propleura in part variolate and somewhat sparser along the prosternal sutures; venter more finely punctate. Hind coxal plates strongly and rather abruptly dilated inwardly. Length, 5.9 to 7.3 mm.; width, 1.6 to 1.75 mm.

Florida: Royal Palm Park, Dunedin, and Haulover; five examples. The type is a male from the first-named locality, bearing date Mar. 27, 1924, and collected by W. S. Blatchley.

This species is nearest *longulus* and is very likely mixed with it in collections, probably under the name *digitatus.* It is quite distinct from *longulus* by the smaller size, clouded thorax and longer antennæ.

Anchastus subdepressus new species.

Elongate, subdepressed, parallel sided, equally narrowed before and behind; rufocastaneous, shining, finely pale pubescent. Antennæ slightly passing the hind angles of the thorax, scarcely serriform, joints 2 and 3 very short, transverse, 3 just perceptibly longer than 2, together shorter than 4, which is about one-half longer than wide. Head convex, coarsely closely punctate, clypeal margin convex. Prothorax very slightly wider than its median length, rather coarsely and densely punctate laterally, more sparsely and finely at middle of disk, where the punctures are distant on the average by their own diameters; hind angles bicarinate, the outer carina longer, quite near the margin and perfectly parallel thereto throughout, the margin not visible from above. Elytra barely visibly wider than the thorax and three and one-half times as long, almost three times as long as wide, sides parallel in basal two-thirds, thence arcuately convergent to the narrowly rounded apex; striæ fine, finely punctate; interspaces sparsely punctulate. Prosternum rather loosely punctate, propleura densely rather coarsely so externally, less closely along the prosternal sutures; venter more finely punctate; hind coxal plates strongly dilated inwardly. Length, 8.8 mm.; width, 2.3 mm.

Santa Rita Mts., Arizona: A single example, sex unknown, received many years ago from Prof. Snow.

By Van Dyke's table this species runs unequivocally to *sericans* Cand., but according to Mr. Liebeck, who has kindly compared the above with Horn's type, the latter is materially larger, much more convex, especially the thorax, which is only slightly narrowed in front, with hind angles more strongly bicarinate. In the present species the sides of the thorax are rather strongly arcuately convergent in front, becoming parallel basally.

Hypnoidus Steph.

Hypnoidus (Cryptohypnus) valens new species.

Elongate, depressed, piceous black, shining; legs red, basal joint of antennæ red, following joints dull rufous at base, their apices more or less dusky; pubescence of upper surface short, brownish and rather obscure; beneath denser, more grayish and appressed. Antennæ nearly attaining the hind angles of the thorax, all joints longer than wide. Head one-half as wide as the thorax, front slightly concave, rather coarsely not very closely punctate. Prothorax slightly longer on the median line than wide, widest just behind the middle, sides slightly convergent and feebly arcuate anteriorly, sinuate behind, the hind angles slender, divergent and carinate; disk flattened and impressed medially, coarsely punctate throughout, the punctures a little elongate, nearly in contact laterally but separated by about their own diameters at middle. Elytra just perceptibly wider than

the thorax and 2.4 times as long as the latter on the median line, fully twice as long as wide; disk moderately convex; striæ indistinctly punctate; intervals nearly flat with numerous irregularly placed fine punctures. Propleura very coarsely punctate; the prosternum more sparsely so except on the lobe, where the punctures are densely placed; metasternum and ventral segments more finely and sparsely punctured; the intervals between the punctures of the lower surface everywhere finely punctulate. Length, 10 to 10.7 mm.; width, 2.95 to 3.2 mm.

Described from two examples collected by Ricksecker many years ago. They bear label Sylvania, California, which is, I believe, near Santa Rosa. The type is, I think, a female and carries date 4–13–96.

This species is nearest *grandicollis* Lec. and was, at least at one time, so identified by Dr. Van Dyke. A comparison with Le Conte's type, however, shows at once that such reference is impossible. The Le Conte type is a female somewhat smaller (about 9 mm.) than the present species, a little less depressed, with slight æneous lustre, the antennæ entirely red, the elytra perceptibly shorter as compared with the thorax, being only about two and one-sixth times as long as the latter, the thoracic punctures finer and circular rather than elongate, separated by their own diameters at sides and still finer and more remote at middle. In the second example in the Le Conte cabinet, the so-called male from Oregon (see Horn's remarks, Trans. Am. Ent. Soc., 1891, p. 5), the pronotal punctures are still sparser, being nearly as remote at sides as at middle. The interstitial punctures of the elytra are nearly twice as numerous in *valens* as in either of the two Le Conte examples of *grandicollis*. Le Conte described his type of *grandicollis* as from "Canada," an unsatisfactorily vague locality, but it is likely that it came from somewhere east of the Rocky Mountains.

In his recent paper Van Dyke compares his *Hypnoidus glacialis* n. sp. with *grandicollis* in such terms as to indicate that he does not know the true *grandicollis* and may still be confusing the present species with that of Le Conte.

Hypnoidus manki new species.

Elongate, moderately convex, black with faint æneous lustre and without markings; surface finely sparsely cinereo-pubescent; body beneath black, legs piceous, extreme base of thighs also tibiæ and tarsi more or

less evidently paler. Antennæ extending well beyond the hind angles of the thorax, not much shorter than half the length of the body, piceous, second joint pale and distinctly shorter than the third, the latter a little narrower than but subequal in length to the fourth. Head flatly convex, somewhat roughly punctate. Prothorax about as wide as long, widest at middle, quite strongly convex, shining; sides strongly arcuate, sinuate at the hind angles, which are acute and divergent; disk finely evenly not densely punctate, the punctures just perceptibly coarser in front, a narrow median smooth line; carina of hind angles attaining about the basal third. Elytra slightly to scarcely wider than the thorax, not quite twice as long as wide, widest more or less before the middle; discal striæ not deep but all distinct and entire, finely punctate; intervals nearly flat and finely punctulate. Body beneath shining, finely sparsely punctate throughout. Prosternal sutures single; hind coxal plates externally narrow but not obliterated. Length, 2.7 to 3.3 mm.; width, 1 to 1.2 mm.

Described from six examples taken in Glacier Park, Montana, by Miss Edith Mank of Lawrence, Mass., in whose collection are additional specimens. The type is a male bearing date July 8, 1929. The species is dedicated with much pleasure to Miss Mank in recognition of her several successful collecting trips to the Park and of many valued contributions to my cabinet.

By Horn's table (Trans. Am. Ent. Soc., 1891, p. 2) the present species runs to the Melsheimeri group if the pronotal punctures are regarded as appreciably coarser in front than posteriorly. They are only just visibly so at best, but this is also true of certain species included by Horn in the group, e.g., *tumescens,* after which *manki* may be placed. It differs from *tumescens* by its narrower form, and notably by its longer antennæ having the second joint shorter than the third, while in *tumescens* as well as other species of the group the antennæ are distinctly shorter and have the second joint equal to or longer than the third. In antennal characters and indeed in general aspect *manki* exhibits a marked similarity to *restrictulus,* but in this latter species the elytral striæ are in part faint or almost obliterated, and the males possess a unique sexual character in the form of the last ventral segment. The resemblance of *H. restrictulus* to *Oedostethus femoralis* is noted by Horn in his paper (p. 26) and his remarks apply with equal force to *H. manki.*

Horistonotus Cand.

Horistonotus pallidus new species.

Form narrowly elongate, moderately convex, color above and beneath including antennæ and legs flavotestaceous, the extreme sutural edge of the elytra rufous or rufescent; pubescence fine, inclined, pale yellow; surface somewhat shining. Antennæ slender, passing the hind angles of the thorax, joints proportioned as usual. Eyes large, their vertical diameter about five-sixths the width of the front. Prothorax as long as wide, widest at or slightly in advance of the middle, sides arcuately convergent in front, nearly straight and just perceptibly convergent posteriorly; surface of head and pronotum with the usual dual punctuation, the coarser punctures of which are very fine and uniformly distributed, the finer punctures quite minute but visible. Elytra distinctly wider than the thorax, very nearly three times as long as the latter and about 2.3 times as long as wide; humeri well defined, not oblique; striæ fine and feebly impressed on the disk, a little deeper at base and sides; strial punctures distinct at base, becoming finer apically; interspaces nearly flat on the disk, sparsely irregularly finely punctate. Propleura, prosternum and metasternum very minutely punctulate with sparse slightly larger punctures intermixed; ventral segments similarly but somewhat more closely and distinctly punctured. Length, 5.7 to 6.3 mm.; width, 1.7 to 2 mm.

Described from a series of six specimens, all taken on the Colorado Desert at Indio, California. The type is a male.

This species belongs to "Series B" of Horn's table, where it will come under caption "7," having the base of the thorax distinctly wider than the apex. Horn's further statement that the thorax is as wide at base as at middle does not, however, apply to the present species, nor is it true, at least in certain examples, of either *curiatus* or *gracilis*. From the associated species *pallidus* is at once separable by its color.

Horistonotus fidelis new species.

Closely related to *simplex* Lec. (for description of which see Horn's paper) but differing as follows. The size is materially smaller (5.75 to 7.1 mm.), form a little less stout, color reddish brown, the eyes in the male relatively a little larger, the antennæ longer, distinctly passing the hind angles of the thorax in the male and fully attaining the angles in the female, sides of thorax almost perfectly straight and parallel in posterior half; other characters virtually the same as in *simplex*.

In *simplex* the length ranges from about 7.5 to 8.5 mm.; the color is fuscous brown, the antennæ do not quite reach or at most do not pass the hind angles of the thorax in the male and

are still shorter in the female, the sides of the thorax posteriorly are less straight and parallel, showing a feeble arcuation.

H. fidelis is represented in my collection by six specimens from Indio, California; La Puerta Valley, San Diego Co., California; and Las Vegas, Nevada. The type is a male from Indio, collected and sent me by Mr. F. Stickney.

H. simplex was described from Cape San Lucas, Lower California, and all the typical examples I have seen are from the Peninsula.

Horistonotus fidelis fuscus new subspecies.

This name is proposed for a form represented in my collection by a series of six specimens from the Baboquivari Mts. in Southern Arizona. It is closely similar in nearly all respects to *fidelis* but differs in its dark fuscous brown color, somewhat larger size and rather shorter antennæ although these in the male slightly pass the apices of the hind angles of the thorax. The sides of the thorax are straight behind the middle or very nearly so as in *fidelis*. The length ranges from 7.3 to 8.1 mm.; width, 2.3 to 2.5 mm. The type is a male bearing date September 25, 1923; collected by Poling.

It is probable that all three of the above forms are included by Horn in his conception of *simplex,* and the less critical student may, if he prefers, regard them all as variants of a single species.

Esthesopus Esch.

I much regret to say that in describing my *Horistonotus flavidus* I failed to notice the small lobe of the fourth tarsal joint, which I now find to be present. This makes it necessary to refer the species to the genus *Esthesopus,* where it is very nearly allied to *E. dispersus* Horn, from which the narrower form and pale flavotestaceous color may be sufficient to distinguish it. The type of *flavidus* was from Palm Springs, California; more recently I have received another specimen from Indio, California, not far from the type locality.

Horn describes *dispersus* as reddish brown and moderately robust, which correctly characterizes the two Texas examples in the Le Conte cabinet, one of which bears the name label in Horn's hand, and also fits well enough several South Arizona specimens in my own collection which I provisionally refer to *dispersus.*

Esthesopus indistinctus new species.

This name is proposed for a species represented in my collection by a small series of specimens from the vicinity of San Diego, California (Jacumba, La Puerta Valley), which do not quite agree with either *dispersus* or *flavidus*. They are rufotestaceous in color, and of slightly stouter form than in *flavidus*, but their chief claim to distinction is the very faint or nearly obliterated micro-punctulation of the pronotum, this being quite evident in both *dispersus* and *flavidus*. In size and practically all other respects except color and pronotal punctulation they conform well enough to Horn's description of *dispersus*. The type is a male bearing date VII, 1911; specimens all collected by Mr. G. H. Field.

Melanotus Esch.

As Dr. Van Dyke truly remarks, this genus is very poorly represented in California. The three species, *longulus, oregonensis* and *variolatus,* described by Le Conte comprise the characteristic *Melanotus* fauna of the State, and their satisfactory delimitation has always proved a perplexing problem for the student. Van Dyke cuts the Gordian knot by setting them all down as phases or variations of a single species. The problem, however, does not admit of so simple a solution. The aggregation which he includes under the oldest name, *longulus,* embraces certainly two and probably three species, with an outside chance that still another may be involved.

1. First, there is the rather small slender brown form occurring about San Diego and ranging east into the desert. This is typical *longulus.* A little farther north, in the vicinity of the coast, at Pasadena, Pomona, etc., is a similar though usually slightly stouter form, most often black but sometimes brown, which one would be tempted to consider as distinct from *longulus,* especially if black examples only were at hand. I have, however, been quite unable to separate them from the typical form and dissection shows that the male genital characters are identical.

2. *Oregonensis.* This was described from a single specimen collected in Oregon, specific locality not stated. The type is brownish black, 12 mm. long, and of rather narrow form. As indicated by Van Dyke *oregonensis* ranges north into Washington and British Columbia, and south into Northern California, through the Sierra Nevadas and eastward into Utah. The species

is brown or blackish brown, probably never truly black, and the smaller specimens look not unlike the larger brown examples of *longulus;* the male genitalia, however, are quite different and the two species are unquestionably distinct.

3. *Franciscanus* VanD. With the type of *oregonus* in the Le Conte collection are placed four stouter black specimens (2 ♂, 2 ♀), all from California, one of the females bearing locality label "Berkeley," and all probably from the vicinity of San Francisco. These black specimens are not identical with the type, but are the so-called "race or subspecies" *franciscanus* of Van Dyke. They differ from *oregonus* in their distinctly more robust form, deep black color, somewhat shorter and broader antennæ, with the third joint relatively shorter, generally less divergent hind angles of prothorax, and oftentimes more sparsely punctured pronotum. The male genitalia are very much alike, but in the few specimens dissected I notice a small difference in the form of the side pieces or lateral lobes, these being in *franciscanus* slightly less sinuate before the apical dilatation, which is in consequence a little less marked. For these reasons I prefer to consider *franciscanus* a distinct species and believe further experience will support this view.

4. *Variolatus* Lec. Just what this species is it is hard to say and herein lies the outside chance for a fourth species. The Le Conte series comprises three specimens. The first specimen, bearing the name label and to be regarded as the type, is a female, 11 mm. long, dark brown, moderately robust, third antennal joint not much longer than the second, sides of thorax only very faintly sinuate posteriorly, the hind angles parallel. The second and third examples are male and female of the less slender black form of *longulus* referred to above and which is the common form in Los Angeles County. These two specimens are different in color from the type, with more slender antennæ, a longer third antennal joint, the hind angles distinctly divergent as is typical of *longulus.* They look different from the type and may well be so. Some one—probably Van Zwaluwenburg, who studied the Le Conte collection—has attached a small label to each of the second and third examples expressing the opinion that they are not the same as the type. Nevertheless, for the

present and until females identical with the type and accompanied by males are available, it seems best to consider the type as an individual variant of *longulus*.

Limonius Esch.

The presentation of a synoptic table and bibliography of all our known species of this difficult genus is one of the most notable and acceptable features of Van Dyke's valuable paper. No American coleopterist has ever ventured to offer such a table, and that by Candèze in 1860 is much too old to be of satisfactory service today.

I am glad to note that Van Dyke does not accept *Pheletes* Kies. in full generic sense. It may have a more definite value in the few European species, but Candèze long ago rejected it for the much more numerous American species because of the gradational nature of the character on which it is based. Even when used in a subordinate sense the character of the prosternal sutures, whether excavated in front or not, is somewhat ambiguous, and the placing of certain annectent species is more or less a matter of individual opinion.

Certain instances of synonymy accepted or proposed by Van Dyke in his paper suggest the following comments.

Limonius discoideus Lec.

Of this species the author says in his table (p. 340), "a lighter phase of *canus* restricted to females." I seriously question the accuracy of this statement. It is true that all typical specimens of *discoideus* are females, but corresponding males, while quite similar to *canus,* are not *canus.* This assertion is well illustrated by a good series of specimens in my collection from Healdsburg, Sonoma Co., California. Of these the females are all typical *discoideus,* while the males closely resemble *canus* but differ from typical examples of the latter from the San Francisco sand hills region by the notably longer antennæ, which pass far beyond the hind angles of the thorax. In the males of *canus* the antennæ scarcely or only very slightly pass the thoracic angles. The disparity between the shorter antennæ of the females of

the two species is noticeable but perhaps less marked; I have seen too few females of *canus* to speak with much certainty here.

Le Conte's type of *canus* was described from San Diego. My specimens are from San Francisco and Carmel. I have seen no specimens from the interior and do not know whether its range extends farther north along the coast than San Francisco. *Discoideus* is found in the northern Rockies and thence west to the Pacific Coast, down which it extends through Northern California, and probably farther in the mountains. I have no doubt that it is this species and not *canus* that Mr. M. C. Lane has studied in Washington State.

Limonius occidentalis Cand.

The suppression of *occidentalis* as a distinct species and its union with *californicus* as a mere color phase appears to be abundantly justified by my own series.

Limonius ectypus Say and *L. agonus* Say

These two species of Say's are united by Van Dyke, but whether from personal conviction or merely in acceptance of the authority of the Leng List, which in turn is virtually a transcript from Otto Schwarz in "Genera Insectorum" does not appear. In any case the synonymy is not valid. There are three external characters mentioned below, any one of which enables the two to be separated with a little care, and which taken together should be of sufficient weight to warrant their retention as distinct species; but if this is not enough I may add that the male genitalia are distinctive. In *agonus* the third antennal joint is slightly larger than the second, but more nearly resembles it in form than it does the fourth joint. In *ectypus* the third joint is relatively wider and more triangular, thus showing a greater likeness to the fourth joint than to the second. In *agonus* the sides of the thorax are rounded in at the hind angles which are not at all produced; in *ectypus* the sides of the thorax show a slight sinuation basally, the hind angles slightly longer and either parallel or (usually) perceptibly though feebly excurved. These differences in the hind angles are recognized by both Say and Le Conte in their descriptions. In *agonus* the elytral striæ are perceptibly impressed and more strongly punctate, while in

ectypus they are scarcely impressed and the strial punctures are finer. Van Dyke's tabular diagnosis for "*ectypus* (*agonus*)" fits *agonus* well as to antennæ and elytral striæ, while his diagnosis of *anceps* Lec. would serve well for *ectypus*. In this connection it should be remarked that he says of *anceps*, "probably only a phase or variety of *ectypus*," in which opinion I quite agree with him.

Limonius infuscatus Mots.

It has been my experience that there has existed among collectors a general feeling of uncertainty as to just what this species is. In the Le Conte collection *infuscatus* is represented by a row of five specimens, of which the first in line was sent to him by Motschulsky and bears a label with name and locality "Calif." in the latter's handwriting. This specimen is a male, 8.8 mm. long, with æneofuscous thorax and reddish brown elytra, the vertices of the hind angles of the thorax paler. With the exception of length it agrees in all respects with Motschulsky's description and must be regarded as a typical exponent of the species.

In the matter of length a peculiar situation exists. Motschulsky in his description gives as the length of *infuscatus* "3–3⅔ l.," or 6–7⅓ mm., which indicates an insect scarcely larger than our *L. quercinus*. I have never seen a specimen of so-called *infuscatus* so small as the larger of these measurements and the typical example sent by Motschulsky himself has a length of 8.8 mm. as stated above. The fact that Motschulsky in his remarks speaks of *infuscatus* as being considerably smaller than his *L. angulatus*, to which he gives a length of 4⅕ l. (8.4 mm.), seems to forbid our ascribing the apparent inconsistency to a mere slip of the pen or to a printer's error. On the other hand, Van Dyke gives as the limiting lengths of *infuscatus* 11 to 14 mm., which to me is equally extravagant in the opposite direction, since not one of my so-called *infuscatus* measures up to the lower limit which he sets and only two examples of my *vernalis* series reach this limit. The natural inference would be that *infuscatus*, as I understand it, does not enter into Van Dyke's conception of the species, and that *vernalis*, which he considers a subspecies of *infuscatus*, cannot be included in his measure-

ments, since the average length of the 18 examples of *vernalis* in my collection is only 9.2 mm.

But to return to the Le Conte series. The second example in line is apparently a male of *vernalis;* it bears a gold disk locality label indicating California, and is probably from the southern part of the State. It is closely related to the Motschulsky type, differing in its slightly more elongate thorax, with less rounded sides and the presence of a small though perceptible sinuation at the hind angles; the antennæ are also a bit longer though otherwise the same. The third and fourth specimens bear a blue locality disk (Oregon); they have the thorax entirely black and feebly æneous, the sides with no posterior sinuation; one of them is a male by the exposed genitalia and has the antennæ scarcely or barely attaining the hind angles of the thorax (distinctly passing the hind angles in *vernalis*). This is what I have long assumed to be *infuscatus,* but I am now doubtful if it can be the same as the Motschulsky type. The fifth Le Conte specimen is from California; it is in rather poor condition, but seems to be the same as the two Oregon ones.

Aside from the disturbing measurements, which we may perhaps ignore, two other statements in Van Dyke's tabular diagnosis of *infuscatus* would, if strictly interpreted, exclude the typical example in the Le Conte collection. He says: "Prothorax always slightly longer than broad" and "subparallel toward the base." In the Motschulsky specimen the prothorax by actual measurement is as wide as the length on the median line, and it is distinctly narrowed both before and behind as the description calls for ("antice posticeque angustato"). If the word "always" in the first of the above statements were changed to usually, it would probably apply with sufficient accuracy to the true *infuscatus,* to which a series of specimens in my collection from Northern California closely approximates. In these the thorax is as a rule longer than wide, but varies to slightly wider than long.

In the Southern California *vernalis* the thorax is really longer than wide in all specimens known to me and is distinctly narrowed behind. In the Oregon specimens of the Le Conte series and in others from Washington in my own collection the thorax

is more nearly entirely nigroæneus, the sides nearly parallel behind without basal sinuation and the antennæ shorter than in the above forms; they are nearly allied to *infuscatus* and *vernalis,* but look different and probably deserve a distinctive name.

From the above considerations it must be evident that the matter is somewhat involved. In any case a definition of *infuscatus* must be such as to include the typical example from Motschulsky in the Le Conte cabinet, and must conform to the essentials in the original description, barring possibly the mysterious measurements.

Limonius pilosulus Cand. (*pilosus* Lec.)

Represented in the Le Conte collection by the unique male type from San Diego. A moderately large example (10.5 mm.) of stoutish form, color of body, including legs and antennæ, entirely black with merest trace of æneous surface lustre. The thorax at middle is very finely and sparsely punctured, but the punctures become rapidly larger and closer toward the sides; joints four and five of antennæ as wide as long, none of the joints with sharply formed outer angles, but all with more or less rounded vertices. This Le Conte type bears no resemblance to *infuscatus* and it is impossible to believe that Van Dyke is justified in uniting it with the latter.

Limonius semiæneus Lec.

While probably rightly regarded as not specifically distinct from *basilaris* Say, *semiæneus* should be given varietal standing and not be placed as a mere synonym of the former as is done in the Leng List. The more or less pale front margin and angles of the thorax and the pale yellow elytra varying to fuscous with yellow margins give it an appearance quite distinct from *basilaris.* In common with *basilaris* it possesses an almost unique character in the genus in the presence in both sexes of numerous short bristling erect hairs on all but the basal three joints of the antennæ. Le Conte, in his 1853 paper, casually mentions this feature in his remarks on *basilaris,* but apparently without appreciation of its unique character. I have noticed nothing like it in any other species of the genus save a feeble approach in *nimbatus* Say.

Semiæneus was described from Georgia. It has been taken by

Blatchley recently at Gainesville, Florida, and by myself on the East Coast at St. Augustine.

Limonius rectangularis new species.

Elongate, parallel, rufotestaceous throughout, the legs scarcely paler; conspicuously but not densely pilose, the pilosity consisting of semierect more or less recurved hairs mingled with longer erect ones, the latter subserially arranged on the elytral intervals; surface somewhat shining. Head nearly flat, densely coarsely punctate, clypeus feebly reflexed, the edge broadly evenly arcuate, not perceptibly impressed at middle. Antennæ long and rather slender, passing the hind angles of the thorax by about four joints; feebly serrate, joints 2–4 gradually longer and wider, each fully twice as long as wide, 4–11 very gradually narrower, 8–10 each about two and one-half times as long as wide, 11 slightly more elongate. Prothorax about one-eighth longer than wide, sides virtually straight and parallel throughout, base and apex equal, base angles not at all produced, rectangular; apical angles with narrowly rounded vertices; punctures rather coarse and close but nowhere in contact, the interspaces polished; median line feebly impressed posteriorly, hind angles with a short carina very near the margin. Elytra three times as long and one-sixth wider than the prothorax, not quite three times as long as wide, sides parallel to behind the middle; striæ of rather strong close set punctures scarcely impressed on the disk and only lightly so at sides; interspaces distinctly irregularly not very closely punctate, hardly rugose. Beneath moderately punctate and pubescent, the last ventral somewhat more coarsely punctured; prosternal sutures double, scarcely grooved in front; basal joint of hind tarsus slightly longer than the second. Length, 9.2 mm.; width, 2.5 mm.

Described from a single specimen, probably a male, collected by Poling at Alpine, Texas, May 20, 1926.

This rather unusual species has somewhat the appearance of certain *Athous,* but the critical characters are all those of Limonius. By Dr. Van Dyke's table it places between *dubitans* and *infuscatus,* but does not resemble either of these species. There is, I think, no previously described species in our fauna in which the thorax is not in some degree at least narrowed in front; in the present species it is almost perfectly rectangular in outline. In this respect it must resemble the Mexican *quadraticollis* of Candèze, but the description of this latter shows it to be quite a different thing.

Elathous Reit.

Elathous brevicornis new species.

Moderately elongate, chestnut brown, basal declivity of the elytra rufous; epipleura, body beneath, legs and antennæ rather dark rufotestaceous; integ-

uments moderately shining, clothed with a very short fine suberect pile. Head deeply triangularly impressed in front, rather coarsely and closely punctate, clypeal margin well advanced, arcuate. Antennæ (♂) not reaching the apices of the hind angles of the thorax, joints 2 and 3 subequal, each a little longer than wide, together longer than 4, the latter wider but very little longer than 3, a little longer than wide, 5–10 similar to 4 but gradually feebly decreasing in both length and width. Prothorax apparently distinctly longer than wide but by actual measurement the length on the median line and the maximum width are 2.5 and 2.3 mm. respectively; sides rather strongly arcuately convergent anteriorly, a small but evident sinuation just before the apices of the hind angles, of which the vertices are a little everted; disk rather strongly convex, median line impressed only near the base; punctuation somewhat coarse, close and variolate at sides, becoming much finer, sparser and simply perforate along the middle; hind angles with an acute but not long carina which diverges strongly from the margin. Elytra a little wider than and slightly more than two and one-half times as long as the thorax; parallel and feebly arcuate in basal half; striæ finely impressed and finely punctate, intervals faintly convex and sparsely punctured. Propleura coarsely rather closely punctate, prosternum somewhat less coarsely so, metasternum and ventral segments much more finely punctate. Length, 9.5 mm.; width, 2.7 mm.

Described from a single male specimen taken by myself in the San Bernardino Mts., California.

This species must be nearly allied to *californicus* VanD., but there are several differences which appear to indicate its distinctness from the latter. As compared with *californicus*, it is smaller, somewhat less dark in color and with less disparity in tint between the upper and under surfaces; the antennæ are shorter, not reaching the hind angles of the thorax, whereas in *californicus* they extend beyond the angles. In the present species joint three of the antennæ is barely visibly longer than two, and two and three together are much longer than four, while in *californicus* joint three is conspicuously longer than two, and together they are barely longer than four. In *californicus* the pronotal punctures are said to be but little coarser laterally; in the present species they are very distinctly coarser at sides.

Elathous brunnellus new species.

Dark piceous brown above, the hind angles of the prothorax obscurely and the margin of the basal declivity of the elytra more brightly, rufotestaceous; beneath dark brown, the prosternal lobe, inner and rear margins of propleura, epipleura and legs rufous or rufotestaceous. Integuments shining, pubescence fine, short and semierect, yellowish brown but rather obscure.

Antennæ brown, very nearly attaining the tips of the hind angles of the thorax; joint 2 slightly longer than wide, 3 perceptibly narrower and very little longer, the two together evidently longer than 4, joints 4–10 scarcely serrate, each elongate triangular, 4 less than twice as long as wide, 10 fully twice as long as wide. Head strongly impressed anteriorly, punctures rather coarse, well separated. Prothorax distinctly longer than wide, sides moderately convergent and just perceptibly arcuate from base of hind angles to apex; hind angles triangular, acute, divergent, with fine sharp carina close to the outer margin and concealing the latter from above; disk evenly convex, median line not visibly impressed, sparsely finely punctate at middle, the punctures becoming larger, closer and subvariolate toward the sides. Elytra subparallel; striæ moderate, distinctly punctate basally, becoming obsoletely so apically; intervals a little convex, sparsely punctate and transversely rugulose. Body beneath shining and finely simply punctate except on the propleura, where the punctures are coarser, closer and subvariolate. Length, 6.7 mm.; width, 2.1 mm.

Pine Flats, Sierra Madre Mountains, 7000 feet, Southern California. A single male specimen.

This species is nearly allied in all essentials with the preceding species and with *californicus,* but is much smaller than either and differs in its nearly uniform coloration of both upper and lower surfaces, and in its darker antennæ. The close approximation of the carina of the hind angles of the thorax to the side margin will distinguish it from *brevicornis,* and presumably also from *californicus.*

Ludius Esch.

Ludius cribrosus Lec. and *L. maurus* Lec.

I must confess to being completely nonplussed by Dr. Van Dyke's announcement that *cribrosus* and *maurus* are respectively male and female of the same species. The statement is positively made that the relationship "has been shown by careful field studies," yet it would be interesting to know just what the observations were that led to this conclusion.

Be this as it may, it is a fact that in my series of both *cribrosus* and *maurus* both sexes are present, and in each case the two sexes agree in possessing the characteristics of the respective species.

In the Le Conte cabinet there are six examples in the *cribrosus* series and four in that of *maurus.* The last two of the *maurus* series are later acquisitions and really belong with *cribrosus.*

One of the two genuine *maurus* is certainly a male by the exposed genitalia, the other is apparently a female.

Aside from the broader more depressed form, somewhat differently shaped thorax, and denser punctuation of the pronotal disk in *maurus,* the two species are, in my experience, always separable by antennal characters. In *cribrosus* the third antennal joint is fully twice as long as the second, very distinctly triangular, and though less wide bears a general resemblance to the fourth joint; in *maurus* the third joint is rarely if ever as much as twice the length of the second, the form much narrower and more similar to the second than to the fourth. In general the antennæ are shorter sex for sex in *maurus* than in *cribrosus,* the length in the male in *maurus* being about the same as in the female of *cribrosus.* In males of *cribrosus* the antennæ as a rule extend well beyond the tips of the hind angles of the thorax, but I notice some lack of constancy in this respect in my series. The male genitalia are quite similar in the two species but not identical.

Ludius colossus Lec.

The placing of *colossus* by Van Dyke as a giant female form of *cribrosus* is scarcely less difficult to accept than his disposition of *maurus.* If, as he implies, only females are known, and these are "often found" in the Southern Sierras, we certainly have to do with a remarkable situation which needs in some way to be explained. Personally I have seen very few specimens of *colossus* and have no alternative theory to offer; but in a consideration of probabilities it is pertinent to say I recall no other single instance in the genus or indeed in the entire family where a mere increase in size in one sex of a species is accompanied by a definite set of structural differences such as *colossus* possesses. Whatever be our theory as to the status of *colossus,* it is to be hoped that it may be possible ere long to test it by breeding or by the discovery in nature of actual association of the sexes.

Ludius nigricans Fall

The reference of this species by Van Dyke to *rotundicollis* as a subspecies is, in my judgment, quite unwarranted. There may well be a more or less remote community of descent between the

two species, but it would be quite gratuitous to assume that either one was a direct offshoot of the other. The differences are striking, sufficiently constant and of an order that is ordinarily considered to be specific. *Nigricans* is, in the first place, a materially larger species. In it the thorax does not at all approach the peculiar rotundate quadrate form characteristic of *rotundicollis*. The pronotal punctures are very much coarser and closer than in *rotundicollis*, in which they are very sparse and fine, being only just perceptibly larger than those of the elytral interspaces. In *nigricans* the interstitial punctures are two or three times as numerous as in *rotundicollis*, and the striking disparity in size between them and the pronotal punctures is one of the most notable points of difference between the two species.

Ludius diversicolor Esch.

Dr. Van Dyke records this as a subspecies of *rotundicollis*, citing only the red thorax as the distinguishing character. Inasmuch, however, as Say described *rotundicollis* as having the thorax red, *diversicolor* appears not to have a leg to stand on and must be returned to synonymy.

Ludius castanicolor new species.

Moderately elongate, convex, dark chestnut brown, under body a little paler, legs and antennæ rufotestaceous; surface rather strongly shining, pubescence exceedingly short and sparse, almost invisible. Head strongly closely punctate, front flattened and feebly biimpressed. Antennæ barely attaining the hind angles of the thorax, third joint narrowly subtriangular, nearly twice as long as wide, about one-half longer than the second and slightly longer than the fourth; fourth triangular, slightly longer than wide, fifth to tenth as wide as long. Prothorax strongly convex, slightly wider than the median length, sides rounded and converging in front, parallel at middle, perceptibly sinuate at base of hind angles, these moderately produced and a little divergent; disk with a fine median impressed line; punctures moderate, separated by an average distance of about their own diameters, slightly coarser and closer but not in contact near the side margins; hind angles with a moderate carina. Elytra nearly three times as long as the thorax and at base as wide as the latter; two and one-eighth times as long as the width at apical two-fifths, where the width is fully one-fourth greater than that of the thorax; striæ rather deep, distinctly punctate; intervals evidently convex, sparsely finely punctulate. Prosternum moderately coarsely sparsely punctate, propleura more densely so, the punctures however nowhere in contact; metasternum and ventral surface finely nearly

evenly punctured, the punctures slightly closer toward the side margins of the body. Length, 9.3 mm.; width, 3.15 mm.

Jemez Springs, New Mexico; June 20, 1923. Described from a single example of unknown sex.

This species by Van Dyke's table runs to "68," except that the form is less flattened than there indicated and the intermediate joints of the antennæ are fully as wide as long. In form it bears considerable resemblance to Van Dyke's var. *ater* of *cruciatus,* but the latter is black, the antennæ less stout and the pronotum without or with but faint trace of impressed line, at least in the specimens which I have seen. It also somewhat resembles in color the eastern *splendens,* but is of more convex form and is entirely devoid of the metallic lustre which characterizes that species.

Eanus Lec.

The small group of species once recorded in our Lists under the generic name *Paranomus* have of late years been included as a section of *Ludius.* If they are to be recognized as a separate genus the name *Paranomus,* being preoccupied, must be abandoned and the generic name *Eanus* of Le Conte must be restored. This has been done by Mr. W. J. Brown, who gives a synopsis of our species in the *Canadian Entomologist* of July, 1930.

It is evident that Brown's paper was overlooked by Van Dyke, in whose synonymy (p. 444) some change is necessary. Whether our well-known transcontinental species should continue to be called *costalis,* as identified by Candèze, seems now a matter of uncertainty. Mr. Brown, after comparing European specimens with our own, claims in his paper that our species is distinct from the European and must be known as *decoratus* Mann. I have made like comparisons in my own cabinet and have been unable to come to a definite conclusion. Certainly size and elytral maculation (or lack of it) have no weight. The other points mentioned by Brown I am able to detect in some specimens, scarcely so in others, and on the whole they seem rather tenuous.

Eanus maculipennis Lec. (= *pictus* Cand.)

The placing of this species as a synonym of *costalis* in the Leng List is a bit of absurdity for which I suppose the List is

not responsible, but which is difficult to account for, since the two species are palpably distinct. Brown has shown that *maculipennis* has a slight priority over *pictus,* though we have been accustomed to the reversed synonymy, which I think was accepted without question by Le Conte himself.

Eanus subarcticus Brown

After examining a typical example from Mr. Brown and carefully comparing with my own series and the Le Conte types, I feel certain that this is not specifically distinct from *estriatus* Lec.